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Vital Materialism, Thing Power, & Political Ecologies of Fecal Dust

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Distributed Agency In CAFO Communities

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TABLE OF CONTENTS

This thesis is dedicated to the late Fr. Robert A. Busch, PhD.

Thank you for introducing me to the amazing world of philosophy.

List of Figures

I. On Reading This Manuscript

> "We will assume for the moment that we know nothing of theories of matter and theories of spirit, nothing of the discussions as to the reality or ideality of the external world."
>
> (Henri Bergson, *MM—Images & Bodies*)[1]

The ideas and arguments advanced in this paper may strike the reader as not only strange and peculiar but even threatening and daunting; though in some other vein, they might advance the imaginative wondering accompanying the cosmological sensibilities in all of our minds. To say little of ontological matters yet, the vision articulated herein attempts to make sense of those parts of the world that seem all at once both unimportant and constitutive features of life on Gaia. In the spirit of any other ontological project it aims to make careful pronouncements about the units and things we can claim actually exist.

Pulled by classical questions that fuel speculation on being, I turn myself towards the work of the ontologists, especially those thinkers whose imaginative-capacities always overcome the normative intuitions of the present day. Yet, intuitions can be useful, they speak to the concession of an inner understanding lying on the periphery of human-experience—a world where sense and perception may allude to but not fully reveal the shape of reality. I harbor an appreciation for the worlding refrains carried out in the spirit of Deleuze and his image of thought, the rhizome, favoring assemblages, mapped tendrils, shoots, roots, and mycelium over trees and trunks, or centered and traced totalities.

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[1] Bergson, *Henri Bergson: Key Writings*. 86.

I hold firm to the belief that ontological considerations are imperative for political inquiry for two primary reasons. First, ontological articulations contour the sphere of human concerns and actions—highlighting the value systems that afford recognition to some entities and overshadows the significance or other, more subaltern, units. To begin outright, one must concede that whether or not made explicit, ontological assumptions undergird all approaches to political and historical visioning. Statements about the foundations of reality and the types of actants whose existence can be vouched for draft our approaches to interaction. In the crisis of the climate—for example—ontological assumptions about our claim to dominion over environment arises because of an ignorance of ecology. A traditionalist onto-theology in our public schema demonstrate a clear anthropocentrism. This means that ontological considerations contribute to the political and historical sciences by engaging in immanent critique at the most basic level: by exposing the gaps between our conceptions of things on the one hand, and the state of things on the other. In this way, ontological inquiry has to do not only with *solution-seeking*, but also returns to the fundamental methodology of *problem-posing*. To have an informed ontology first means taking seriously that our most fundamental conceptions about order and existence in the universe not only permeate but also dictate the gravity and mores that we assign to interactions between ontic-agents.

Second, ontological considerations play a critical role not only in our *interactions* but also in our construction of value. Ontological considerations not only behoove political problem posing by exposing the gaps between conception and immanence (vision and reality), but ontological considerations also reorient thought to the nexus of political and moral humility by dangling questions anterior to existentialist or humanist concerns. In this way, ontology broadens and narrows the area of man's concern to entertain thoughts both cosmological and molecular; envisioned properly, it is the methodological discipline against hubris. Put another way, ontology

matters as the intuitive method because its efforts to make precise pronouncements about reality remind us of our contributive, not totalizing, role in the universe.

In ontological circles I observe the most meaningful observations trucking underway in the speculative work of the material thinkers—precisely because such materialist thought is hospitable to deep ecology and cultivates a philosophical willingness to take seriously the role of ontological assumptions in the climate crisis. I find myself fascinated with the allure of objects or things—non-human bodies, molecular intermingling, metals, dusts, particles, sediments, atomic happenings, and material activities: fleshy, vegetal, waxy, dirty, earthy, soot-covered. I am drawn to thing's potential agential capacities, and their secret lives. In this way I turn myself towards the work of the new materialists, especially those thinkers who diligently labor to parse out the emergent processes underway in the material world—the vital materialists. New Materialism rejects the fruits and mechanisms of the linguistic turn—decentering the importance of discourse, culture, rhetoric, language, and signifiers as the tools by which we excavate both meaning and reality. Rather, new materialism begins with a primary urge to take matter seriously—to interrogate its potential capacities. At is core, Vital Materialism rejects the exclusive status of agency endowed to the human estate and calls for an attention to the role lively material things *already* play in our public. Here I write not only in the style of the new materialists and their enticing prose—but also in the spirit and monistic insistence of the Spinozist tradition, affirming a belief in Spinoza as the philosopher *Par Excellence.*

Materialism contributes both an *accountative principle* and a *causative principle* to our political capacities. From a purely accountative standard, materialism allows us to engage substantively with the vast and expansive physical surroundings that dominate the world. These physical objects and happenings can no longer merely be understood as purely or simply the result

of human activity and *control,* insofar as the mere rate and number of some material objects of human origin or purpose have spun decidedly out of human control. Take the widespread prevalence of plastic in the earth's oceans where plastics and microplastic outnumber fish[2]—situating the primacy of matter in our political theories helps to bring our attention to those things that we must account for if for no other reason than materiality's expansiveness and unruly sprawl. The accountative principle of matter contributes to the growing effort in feminist studies, science and technology studies, natural philosophy, deep ecology, and complex systems theory to turn away from theorizations that focus solely on the human estate. Vital materialist contributions to the field of new materialism can be seen as part of a larger intervention in metaphysics and ontology that Brian Massumi observes as "the nonhuman turn." Rebekah Sheldon eloquently explains that "one important function of the 'nonhuman' as an umbrella term to cover these new realisms is the way it calls attention to the myriad ecological, biological, and physical processes that have no truck with human epistemological categories whatsoever."[3] Similarly, materialism, especially in the vitalist context, goes beyond its accountative properties by elucidating a causative principle underway in the natural world. To start discussion from a place of matter immediately concedes the myriad ways that we and the natural world undergo *affect*. Affect is at play in geological and seismic activity that moves ridges and forms mountains—but are also present in the microscopic and basic intermingling's that define the constant motion of atomic events. To say it firmly, materialism presents a potent political concern because matter matters.

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[2] Gove, Jamison M., Jonathan L. Whitney, Margaret A. McManus, Joey Lecky, Felipe C. Carvalho, Jennifer M. Lynch, Jiwei Li, et al. "Prey-Size Plastics Are Invading Larval Fish Nurseries." *Proceedings of the National Academy of Sciences* 116, no. 48 (November 26, 2019): 24143. https://doi.org/10.1073/pnas.1907496116.

[3] See: Richard Grusin's The Nonhuman Turn, UMinn Press, 2015. 195.

In the material world, these emergent processes are most self-evident in the so called 'natural-world,' wherein biological and pscyho-chemical processes dictate the outcomes of natural life along emergent lines of flight. In this project, I integrate thought from the work of the ecologists, especially those thinkers who find themselves reflected in their natural world and observances. I follow the spirit of Jane Bennet who trades language of environment, because of its reliance on anthropocentrism through reification of generalities and taxonomies, for situations of ecology which hope to take seriously the interactions *between* agents.

To realize that all ecologies are immediately saturated with political-activity is to situate the democratic importance of local-life. This is an extension of the larger project to bring the sciences into democracy and to extend democracy itself to non-human polity. In this way, I find myself turning towards the political theorists, especially those thinkers who make accommodations for extra-human polity. I find myself particularly drawn to the work of Bruno Latour and Manuel DeLanda. I carry an affinity and preference for DeLanda, a Mexican-American philosopher intervening in the continental tradition inherited by the European intellectuals—an image and representation that my schemas and my backgrounds too can contribute to an intellectual tradition gatekept by its euro-foundationalism.

More than these things (but with these thoughts) this is an essay about the political actants that intermingle in the political ecology of concentrated animal feeding operation (CAFO) communities. In particular, I am interested in taking seriously the thing-stuff that populates our world—a thought project that entertains materialism in a vitalist context by accepting notions of agency that extend to non-human bodies. These notions complicate and inform my watching-of and thinking-of the ecology of Deaf Smith County—a political ecology of fecal dust (and likely other physical operants). The unique political ecology of concentrated animal feeding operations

(CAFOs) and their surrounding communities provides a useful scenario for analyzing the ways in which vital materialism is better suited for political analysis than traditional models of thought. In this framework we can consider seriously the political liveliness and impacts of cattle fecal dust, pollutants, chemical run-off and various other non-human bodies.

Section II. 'What's Up With Metaphysics and Ontology?' explores a brief history in the polemics and development of an idea. Here I map ontological thought from the flux of Heraclitus through the Heideggerian reading of Parmenides to a Deleuzian differential ontology. My argument here will have a main focus: Deleuze, uniquely, allows an ontology through difference that can account for fragmented, evolving, emerging, material, inter-species, collecting, competing, confederating, coalescing entities and their affective realties. In these sections, key terminology will be both appropriated from our histories and introduced to our evolving schemas. The section will ultimately prepare the reader for an ontological openness where material agency can be exposed, unhidden, and made apparent.

Section III. 'Conative Bodies and Vital Impulses' covers the novel work of the new materialists, especially the vital materialist thinker, Jane Bennett, whose own task is to bring a distributed image of agency into the social and political sciences, and to encourage thinkers to open themselves up to the enchantments of our modern entanglements with entities beyond and outside ourselves. In this section I will explore the monism of Spinoza, who employs a systematic philosophy that entices both Deleuze & Bennett. Spinoza's *conatus* influences Bennett's own accounts of *thing-power*, or the "the curious ability of inanimate things to animate, to act, to produce effects dramatic and subtle."[4] Bennett's onto-story of thing power provides a critical and radically insightful lens through which CAFO political ecologies can be appreciated. Precisely

[4] (Bennett, *Vibrant Matter,* 6).

because many of the most active, productive, loud, rowdy, moving, polluting, fertilizing, bioturbating, digesting, infecting, actants in CAFO communities are undeniably non-human, and many more mere material. The provocative conclusion of this section argues that our traditional binaries for interpreting the world and navigating interactions are not only activity-blind but also intellectually confused. Beyond this, the section will also prepare the reader to better entertain subaltern realms and non-linear modes of causality—to attune to emergent processes and unconceal complex systems at play.

Section IV. 'From Linear to Emergent Causality' runs through the developing understandings of emergence erupting from complexity and chaos theory, as well as their experiential corroborations in physics. This emergent understanding of causality allows one to be more attuned to distributive images of agency and appreciate the degrees of affect negotiated between the human estate and its non-human inter-actors.

Section V. 'On CAFOs' explores the dynamism of applying ontological parsing to political thinking and analyzing political ecologies. The characteristics, agents, actors, and issues at play in CAFO political ecologies are explored, including pollution, disease, the lively activity of fecal dust, and the territory of cows.

Ontology, materialism, ecology, politics. Like everything else as component parts of a larger whole, one does not need to equally enjoy or understand each distinction; the closer reading that follows the lines of intuition is likely to be more pragmatic at the end. One only needs to suspend their immediate intuitions about their place in the world.

II. What's Up With Metaphysics & Ontology?

> "I see you everywhere, in the stars, in the river; to me you're everything that exists; the reality of everything."
>
> (Virginia Woolf, *Night & Day*)[5]

Many in the history of science and philosophy regard metaphysics with deep suspicion. Though in the following lines I hope to illuminate the import of metaphysics and its efforts, as well as rescue its materialist history. Metaphysics is a straight deep dive, whereby one rips bare all the components that decorate the stage of existence to consider the strings that under-connect everything of immanency. To be clear and direct: metaphysics is something of a catch-all field for those problems in philosophy that evade clear home in the fields of epistemology, ethics, identity, philosophy of the mind, or the political sciences. In this way it is all at once too large a field for our main concerns—though, more narrow and apropos to our task is the metaphysical question of ontology, the study of being qua being. One could move forward with the rough understanding that ontological concerns are *properly metaphysical* insofar as they pertain to articulations of the most fundamental, basic, and constitutive features of whatever may be called "the real." The implications of any work in ontology are immediately revisionist insofar as they suspend classical understandings and re-dangle the anterior questions of reality itself.

Metaphysicians, like scientists, peddle in observations and names. Ontologists are practitioners of naming. Naming things involves the development of vocabulary necessary not only to observe the world but also to respond to it. This often means the development of novel

[5] Chapter 23.

vocabulary that carries little baggage or weight in terms of semantic-history. New terms that speak to the unique contributions of a navigational awareness in the world afforded by only the most recent development in the sciences. Naming also means a return to terms—a recapture of those terms whose semantic import is evident precisely by their socio-historical value.

I will appropriate terms from the philosophers, the physicists, ecologists, and the political theorists to undergo my metaphysics. This integration fortifies a claim that metaphysics is at its core inter-disciplinary insofar as the increasing elucidation of metaphysical questions relies on the evolving and cumulative methodological situation of the empirical sciences.

In the following sections I want to undergo a brief and non-linear history of these terms. Through this overview I hope to also incorporate insight and analysis from contemporary or novel ontological names apropos both to vital materialism and our historical analysis.

On Heraclitus & Deleuze

"Our affections, as well as our bodies are in perpetual flux"

(Jean Jacques Rousseau)

Early questions of the nature of Being populate the schemas of the pre-Socratics. These questions interrogate the nature of Being as either one or many. The monism of Being as One contrasts with the pluralism of Being as many. Three of these thinkers, Heraclitus, Parmenides, and Democritus play out the earliest debates about the univocity of being. I would like to first pay particular attention and homage to the Obscure, to Heraclitus. It is Diogenes who informs the structure and name of Heraclitus's sole text, *On Nature,* which survives only in its entanglements

with the work of later authors—appearing in polemics and debates for centuries after. This makes Heraclitus a philosopher defined by relations of exteriority like many of his Ionian contemporaries. Heraclitan thought is something of a lyrical set of vague abstractions; though the excerpts available from Heraclitus provide insight when read with an appreciation for their *interactions*.

Exploring twin concepts from Deleuze and Guattari abets this analysis, these are two concepts that the reader should hold on to, as they will abet in the larger ontological project at play. The body corpus of Deleuzian-informed scholarship makes distinction between *relations of interiority* on the one hand, and *relations of exteriority* on the other, where in relations of interiority "the component parts are constituted by the very relations they have to other parts in the whole. A part detached from such a whole ceases to be what it is, since being this particular part is one of its constitutive properties."[6] Texts are bodies. Poems, anthologies, volumes, and books interact with and are acted on. Texts, "like all bodies . . . are affected by other bodies . . . the effectivity of a text-body, including its ability to gesture toward a something more, is a function of a distributive network of bodies "[7] The text-body of Heraclitus's *On Nature* is a body without organs—text snippets un-connectable to the meat or larger thesis, syntax, process, and substance. As a text that demonstrates *relations of exteriority*—or relations "[where] a component part [of a body] may be detached from it and plugged into a different assemblage in which its interactions are different"—the *Physus* of Heraclitus can only be studied as fragments.[8] The following fragments I have highlighted for their particular and expressive ontological pronouncements:

B123: "Nature (*physus*) loves to hide." (Themistius, Orations 5.69)

[6] Manuel DeLanda, *NPS,* 9.
[7] Jane Bennett, "Systems & Things," *The Nonhuman Turn*, 234.
[8] Manuel DeLanda, *NPS,* 10.

> B54: "An unapparent connection (*harmonia*) is stronger than an apparent one."
>
> (Hippolytus, Refutation of All Heresies 9.9.5)[9]

A few things must be made clear. First, what does Heraclitus mean by *physus* and how can its identity be better elucidated to cooperate with its hiddenness? *Physus,* at its most accessible and vernacular translation, means nature. The Greek concept of nature <φύσις> is undivorceable from the image of growth that permeates plant and zoological life. As Geradd Nadaff explains:

> If one considers that all the compounds of the term *phusis* and its corresponding verb *phuō-phuomai* conserve the primacy meaning of 'growth, growing' throughout antiquity (and, in particular, in the context of vegetation), then it seems clear the fundamental and etymological meaning of the term *phusis* is that of growth . . . [A]s an action noun ending in -*sis, phusis* means the whole process of growth of a thing from birth to maturity. [10]

The *physus* that Heraclitus observes includes *process* as central to notions of being. In this way, one could understand Heraclitus's ontological pronunciations to privilege notions of *becoming* as opposed to images of *being*. Heraclitus prefers an ontology of becoming over a taxonomy of being, where things are in flux and constant motion as opposed to a world where things are void.

Though the notion of *physus* in the Ionic lexicon is more nuanced than a mere emphasis on process. Substantive evidence indicates that its use was specifically relevant in cosmological

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[9] Curd, Patricia, and Richard D. McKirahan. *A Presocratics reader: selected fragments and testimonia*. Hackett Publishing, 2011.

[10] Naddaf, Gerard. *Greek Concept of Nature, The: The Politics of Theory-Building and Pedagogy in Composition*. SUNY Press, 2012. (12).

discourses and inquiries—that *physus* is an appropriate synonym for *genesis*—an indicator of origin that accounts for process. [11] Heraclitus' nature that "loves to hide" can be understood as a nature whose processes are always given but not always self-evident. Carrying the dual appreciation and understanding for *physus* as both process and origin—or an origin that accounts for the import of process—consider again these two fragments:

> B123: "Nature (*physus*) loves to hide." (Themistius, Orations 5.69)
> B54: "An unapparent connection (*harmonia*) is stronger than an apparent one." (Hippolytus, Refutation of All Heresies 9.9.5)

Heraclitus's use of the aphoristic and melodic style—much like Zen Koans—calls our attention to attention-itself. Heraclitan fragments require *attunement*—a listening, a listening in the proper key. These two fragments, read together, reinforce a Heraclitan call towards keen attentiveness, to look for the hidden and unapparent. Nature is about growth, but more than this it is about all the elemental phases of growth that account for a thing's journey from creation to fulfillment and actualization; in this way, nature is about change, more than this, nature *is* change. The first lesson of Heraclitus demands observing the *process*, not only the final product of change. The second lesson from Heraclitus necessary for our ontological project demands attentiveness to the hidden connection, the seemingly unimportant but constitutive features of life on earth. Heraclitus teaches that all things are in flux, that being comprises of opposing forces.

[11] Ibid. 18.

"One day, perhaps, this century will be called Deleuzian."

(Michel Foucault)[12]

For Deleuze, "beings are multiple and different, they are produced by a disjunctive synthesis, and they themselves are disjointed and divergent, *membra disjuncta*."[13] *Membra disjuncta* is Latin for scattered bits, limbs, parts. The term often refers to pottery or ceramic fragments—or snippets of prose, poems, and the like, the surviving remains of artifacts become artifacts themselves. These *membra disjuncta* illustrate Deleuze's unitary commitment to a notion of Being expressed through differentiation—one thing scattered all around, moving, moved. For Deleuze, unlike Heidegger, Being has no 'ground' from which entities claim common domain; rather, it is the space between entities that both establishes their difference and constitutes Being. Whereas Heidegger unconceals Being as becoming, Deleuze gives way to the differential pathways along which becoming runs, unruly and spreading. For Heidegger there is ground. For Deleuze, there are roots, tendrils, entangling shoots, mycelium, and mycorrhizal lines which form nodes and apprehend each other along diverging and a-centered lines of flight. For Deleuze, being has a fundamentally unclosed, open, nature.

Deleuze favors the rhizome as an image of thought. A Rhizome is an image of thought that "apprehends multiplicities," developed by Deleuze writing with Guattari in their work *A Thousand Plateaus.* The concept, though having six characteristics, is complex and defies easy re-presentation. A rhizome is a form of what Deleuze and Guattari call 'nomad thought.' Nomad thought is thought "grappling with exterior forces instead of being gathered up in an

[12] Buchanan, Ian. "Introduction." In *A Deleuzian Century?*, edited by Buchanan Ian, 1-12. Durham; London: Duke University Press, 1999. Accessed November 16, 2020. doi:10.2307/j.ctv11smrfw.3.
[13] Deleuze, *Logic of Sense,* 179.

interior form, operating by relays instead of forming an image; [it is] an event-thought . . . instead of a subject-thought, a problem-thought instead of an essence-thought or theorem. . .”[14] The term rhizome is taken directly from the botanical usage, wherein a rhizome is a root structure found in tubers and other plants. The Rhizome’s first distinction is found in its principle of connection. Deleuze, writing with Guattari, articulates that: “Any point on a rhizome can be connected to any other point, and must be.”[15] The principle of connection illustrates the necessary unity underlying the Rhizome. However, what must be taken away here is the radical contingency of the nodes *within* any unity. In this way, the rhizome demonstrates an interconnectedness that defies separative inclinations to form taxonomy, to numerate, to signify, and to represent as distinct.

Deleuze & Guattari further explain about rhizomes: “A method of the rhizome type, on the contrary, can analyze language by decentering it on other dimensions and other registers.[16]” In this way, rhizomes are equally defined by a principle of heterogeneity: an establishment of connection because of difference, not in spite of it. Such a natural example of this arises in the event of the oxymoron, perhaps most acutely when Guattari speaks of ‘waking dreams’ or even the much contested ‘body without organs’ of Deleuzian scholarship. The oxymoron serves, in this attempt, as the topological location of heterogeneity’s integral connection to the principle of connection itself. The trick is this: to see connection where one has previously been programmed to think of disconnect; here rhizomes and differential ontology account for the failures of alternate ontologies, to dare to venture to the out-side and near the peripheries of thought and experience.

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[14] *(Thousand Plateaus,* 378).

[15] Gilles Deleuze & F. Guattari. "Rhizome, Power and Desire, Diagrams of the Social." *I&C Spring* 8 (1981). 52.

[16] Ibid. 53.

Deleuze fortifies the rhizome with his account of multiplicities. Through multiplicities, Vartabedian explains, "Deleuze follows Bergson in positing multiplicity as an *alternative* to one or many when it comes to assessing the nature of Being."[17] Deleuze's adoption of multiplicities is strong and consistent throughout his scholarship, though the idea first appears in his work in *Bergsonism* to map the 'false problem' of spatialized time. For Deleuze, there are "three main aspects to multiplicities: (1) the absence of any prior identity or unity; (2) the reciprocity of the various elements so that no element of the multiplicity exists independently or apart from its other aspects; and (3) the multiple lines of each multiplicity are bound together by multiple connections that form together to create a bound, but dynamic, open system."[18] Deleuze provides the example of a puppet and its puppet-master: "Puppet strings, as a rhizome or multiplicity, do not run back to the reputedly unique will of the artist or puppeteer, but to the multiplicity of nerve fibers which, in their turn form another puppet along other dimensions connected to the first set of strings."[19] The puppet-master is not subject, and the puppet is not object for the puppet and the puppet master are both connected by the lines of flight that form new relationships. Here, we can understand a relative expressive relationship between the puppet and the puppet-master: a puppet reterritorializing a master to become *puppet*-master by its own image; a puppet-master reterritorializing a puppet to become the *master's* puppet. Now, what were to happen if someone were to cut the lines of the puppet, severing its connection from the arms of the puppet-master? A rupture would have occurred. From this point, lines of flight emerge and shoot, connecting the puppet to the floor, in turn recasting a connection to the master's legs, itself shooting up into the

[17] Rebecca Vartabedian, *Multiplicity and Ontology in Deleuze & Badiou.* 8.
[18] Rae, Gavin. *Ontology in Heidegger and Deleuze: a comparative analysis*. Springer, 2014. 129.

[19] Gilles Deleuze & F. Guattari. "Rhizome, Power and Desire, Diagrams of the Social." *I&C Spring* 8 (1981). 54

strata's of the cranial canopy. Deleuze teaches this lesson: " . . . the principle of a-signifying rupture: against those all too meaningful breaks which run through structures or between them. A rhizome can be broken, snapped off at any point, it shoots out again along one or other of its lines, old or new."[20] A fine example of the a-signifying rupture native to rhizomes is the cloud-topped dandelion—from its erection, its topology is only transiently fortified. A burst of wind inevitably ruptures the seedlings from the dandelion, shooting the spores off to find a make new connection: going to know new soils, feel new winds, and taste new waters.

Deleuze	Heraclitus
1. Relations of Exteriority - Comprised of Independent terms - Irreducible to properties of parts - Result of expressed capacities	3. *Physus* - Emphasizes Growth - Accounts for process - Cosmological connotation
2. Relations of Interiority - Terms have constitutive relationships - Reducible to properties of parts Result of arranged of unity	4. *Harmonia* - Requires attunement - Contrasts forces - Characterizes flux

Fig. 1

[20] Ibid. 55.

On Parmenides & Heidegger or Trading Heidegger for Deleuze

"Heidegger is the last universally recognizable philosopher."

(Alain Badiou, *Being & Event)*[21]

Parmenides contests the flux of Heraclitus with a convicted monism—that all things are one. The poem of Parmenides boasts a lyrical and prosaic style—where Parmenides conducts ontological investigation vis-à-vis the vignette of a chariot pulled through the night and into the day. Upon this sojourn, Parmenides heeds instruction from a goddess with metaphysical advice. The goddess proclaims:

> Come now, I will tell thee - and do thou hearken to my saying and carry it away - the only two ways of search that can be thought of. *The first, namely, that It is, and that it is impossible for anything not to be,* is the way of conviction, for truth is its companion.. *The other, namely, that It is not, and that something must need not be,* - that, I tell thee, is a wholly untrustworthy path. For you cannot know what is not - that is impossible - nor utter it . . . For it is the same thing that can be thought and that can be.[22]

[21] Badiou, Alain. *Being and event*. A&C Black, 2007.
[22] POEM OF PARMENIDES, English translation : John Burnet (1892)

Many classical readings of the poem of Parmenides takes away the kernel of truth that a cosmic knowledge can be deduced from a microcosmic mental process. Heidegger goes deeper.

The revival of metaphysics in continental philosophy is owed, largely, to the contributions and revisionist history of Martin Heidegger. It is, paradoxically, Heidegger's vociferous critique of metaphysics that cements metaphysical relevancy in all philosophical inquiry after him. Indeed, it is that Heidegger rampaged through the history of philosophy to determine its end that the continental schools are forced to tarry with his thoughts. In his seminal 1957 lecture "The Principle of Identity," Martin Heidegger shares novel interpretation of his reading of Parmenides to tackle the ancient metaphysical question: is being one, or many? A classical reading of the problem of identity, where:

$$A=A$$

argues that A on the right can be understand as a demarcation where A on the left abets in expressing a single principle, that a thing has claim to identity. That each thing has an identity seems to pose a problem for the debates about the univocity or multiple nature of Being. If each thing has an identity, are not all things unified in identification? Though for Heidegger, this very equation 'conceals' the true principle of identity that it aims to express. A=A is an equation of equality, not an articulation of identity. Heidegger explains, "If someone constantly repeats himself, 'the plant is a plant,' he speaks in a tautology. For something to be the same, one is always enough. Two are not needed as they are in the case of equality."[23] For Heidegger, this articulation of sameness is found most succinctly in the early words of Parmenides: *τὸ γὰρ αὐτὸ νοεῖν ἐστίν τε καὶ εἶνα,* which Heidegger translates as "in fact, it is the same to think as to be."[24] Heidegger grants this a literal interpretation, that thinking *is* Being. By this account, Heidegger

[23] Martin Heidegger, *Identity & Difference.* Harper & Row, 1969, 23.
[24] Ibid 27.

attributes a belonging-together that is circumambient to thinking and Being; that is to say, sameness speaks to the virtue of the mutual co-ordination that some metaphysical categories share. Here, Heidegger gestures to his larger work in *Being and Time* about the distinctions between Being (with a capital B) and beings (with a lower case b, or entity). Heidegger drafts an onto-theology where Being grounds entities, but does not emanate from them. Rather, identity and the difference between Being and entities emanates from the common grounding of Being. Here one could argue that entities are understood through their posterior relationship to Being—that beings are pushed and maintained through Being. A Heideggerian being is equivocal, where all entities are grounded uniformly in Being. Here we can identify two lacunae in Heideggerian thought for which we can trade Heidegger for Deleuze.

First, it is this common grounding that prevents Heidegger from understanding a true ontology of difference. That entities have a common grounding precludes Heidegger from achieving an ontology of difference. In his *Introduction to metaphysics,* Heidegger maintains being as an "indeterminate vapor."[25] For Deleuze, being as indeterminacy returns ontology once again to a constipated question of identity, where variance is falsely rectified as sameness through its claim to a common ground. Whereas Heidegger is concerned with questions of being amidst the possibility of difference, Deleuze explodes these categories to claim being *as* difference. A Heideggerian grounding negates the possibility of difference before it can succeed; in doing so, Heidegger precludes the very possibility of being by failing to account for the expressive character of difference. Here Deleuze succeeds where Heidegger could not, by counting all things through difference and difference alone. In a Deleuzian reading, there is no sameness—not if one is to accept the radical expressions and contours of difference.

[25] Introduction to Metaphysics, 85.

Second, in Heideggerian terms, Being is apropos to thinking, then Being is apropos to man. The fatal flaw of Heideggerian metaphysics is to speak in pure ontological terms is to speak about the human, necessarily. Heidegger argues: "Immediately we find ourselves grappling with the questions: What does Being mean? Who, or what, is man? . . . In this procedure, the traditional concepts of man and Being constitute the toe-hold for the coordination of the two."[26] Many who laud Heidegger observe in him a turn away from classical paradigms that situate human-importance on an uninterrogated pedestal. In particular, early environmentalist philosophers extrapolated from Dasein a reorientation away from language of man and towards language of earth, where Being-in-the-world fortifies an ostensible environmentalism. Heidegger attempts to 'unconceal' the true principle of identity as sameness through his reading of Parmenides; though, it is Heidegger who conceals a true ontology by his obstinacy to situate the Human as the gate through which Being can be made manifest. It is by these metrics that Heidegger can be put to trial for his dogged anthropocentrism, an attribute that he binds to metaphysics until it becomes unbound by Deleuze. Heidegger critiqued metaphysics for its inability to interact meaningfully with history. Through his contributions, ontological inquiry has become "entangled with questions of identity and history, with how we articulate the meaning of our lives, both individually and collectively."[27] In this way, ontology is a field that is more recently situated by its recalcitrance in the human, with a vision of history as biographical, rather than evolutionary or cosmological.

Ontology's traditional privileging of the human not only raises the human's importance above other actants in an ecology but also actively debases and neglects the rich and animated tendencies or capacities of non-human agents in belief-systems. Ontology's stubborn tie around

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[26] *Identity & Difference*. 30.
[27] Stephen White, Qtd by Diana Coole & Samantha Frost in "Introducing the New Materialisms." *New Materialisms, Agency, Ontology, & Politics.* Duke UP, 2010. 5.

questions of the human reinforces dualistic binaries that in turn maintain the precarious centering of the human: alive/dead, organic/in-organic, subject/object, civilized/wild, nature/man, etc.

Three primary impacts result from this over-fixation on the human in ontological works. First, the over-fixation on the human in ontological works justifies classical notions of dominion that work against many forms of life, even human interests. Beyond this, the over-fixation on the human in ontology props up the illusion of inactivity outside of the observable realm of human-activity. Finally, the over-fixation on the human imbues in the collective spirit a profound loneliness due to our insistence on our exceptionalism. Vital materialist contributions to the field of new materialism can be seen as part of a larger intervention in metaphysics and ontology that Brian Massumi observes as "the nonhuman turn." Rebekah Sheldon eloquently explains that "one important function of the 'nonhuman' as an umbrella term to cover these new realisms is the way it calls attention to the myriad ecological, biological, and physical processes that have no truck with human epistemological categories whatsoever."[28] Bennett corroborates, "The nonhuman turn, then, can be understood as a continuation of earlier attempts to depict a world populated not by active subjects and passive objects but by lively and essentially interactive materials, by bodies human and nonhuman."[29] This attempt hopes to integrate this invigorated depiction of lively matter and distributive agency into thought about politics, the sciences, art, and philosophy. As attention is turned towards things, it is necessary to trade Heidegger for Deleuze, if for no other reason to account for the vast array of differences expressed across the world to come. As Bennett explains, "If for Heidegger things expose the limits of human knowing, for Deleuze and Guattari

[28] See: Richard Grusin's The Nonhuman Turn, UMinn Press, 2015. 195.
[29] Jane Bennett, "On Vital Materialism & Object-Oriented Philosophy." The Non-Human Turn, Ed. Richard Grusin, Duke Press, 2009, 224.

people, places, and things forge heterogenous connections and form something like a compound, extended mind."[30]

Deleuze, uniquely, allows for the development of an informed ontology equipped to take seriously the lively nature of matter. Tracing ontological thought from the flux of Heraclitus, to a Heideggerian reading of Parmenides, to an ontology of difference helps us account for the fragmented, evolving, emerging, material, inter-species, collecting, competing, confederating, coalescing nature of various entities whose agency is expressed across a continuum and distributed through their affective capacities. Deleuze provides us with an ontological openness where material agency becomes more apparent.

[30] Jane Bennett, "Systems & Things" *The Nonhuman Turn*, 227.

III. Conative Bodies & Vital Impulses

> "You can find the entire cosmos lurking in its least remarkable objects."
>
> (Wislawa Szymborska)

Political theorist Jane Bennett appropriates the work of Spinoza vis-à-vis her reading of Deleuze writing with Guattari to draw on notions of liveliness and vibrancy that pre-populate both the history of philosophy and physics. Bennett's philosophy departs from largely uncapacious epistemological concerns about objects to more capacious ontological concerns about materialism and the vibrancy of non-human bodies. Bennett is working against a philosophical tradition that privileges criteria of intelligibility, often unwilling to engage in thought with the what Bennett calls the 'out-side," the "exteriority . . . [of] epistemological limit." Bennett's own strive in *Vibrant Matter* is to "shift from the language of epistemology to that of ontology, from a focus on an elusive recalcitrance hovering between immanence and transcendence (the absolute) to an active, earthy, not-quite-human capaciousness (vibrant matter). "[31] Bennett's thing-power inherits a conative tradition from Spinoza.

Spinoza serves as a model conceptual personae to both ground and launch a project of ontological connections. Few thinkers in the history of philosophy have been more rebuked or lauded than Baruch Spinoza. The fruitful deposit of the Spinozist tradition is Spinoza's ability to orient metaphysical projects along lines of immanent critique. As Goetschel observes, "For Spinoza, ontology is a way of opening up a critical perspective."[32] Spinoza's dedication to the

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[31] Vibrant Matter, 3.
[32] Goetschel, *Spinoza's Modernity*, 24.

study of affect, his articulation through the geometric method, his maintenance that each thing contains a strive, and his reorganization of autonomy are all deeply indebted to the larger conviction of Spinoza's materialism and monism.

The bulk of Part I of the *Ethics* is appropriated from the critical questions of Descartes, such that it becomes obvious to even a precursory reader that Spinoza's larger project is to contest the grounds of the cartesian legacy on more fine points, since both thinkers agree that what is required is a non-teleological view of nature. Spinoza's literature, like any, rests on its historical condition—wherein both an inherited and an anticipated canon interact with the literature in constellation. The inherited tradition from which Spinoza operates is deeply imbued with Cartesian contributes to dualism, especially in the form of mind-body dualism. Descartes, some few decades before, had re-entrenched western philosophy with the largest hurdle against both materialism and monism: dualism. Both the scandal and the genius of Spinoza are in the jumping of this hurdle. Spinoza "[refuses] to accord any privilege to either side of the mind-body divide, he instead addresses both simply as aspects of that one and only Substance that undergirds all its forms of expressions. Positing a single universal substance."[33]

Whilst drafting the *Ethics,* Spinoza was involved in correspondence with the Dutch and Calvinist theologian Willem van Blyenbergh. The two addressed the finer points of the *Ethics,* especially as the developing ideas of Spinoza related to Blyenbergh's own interests on the subject of evil. It is in these correspondences that the aim of the *Ethics* becomes clear: "Ethics . . . as everyone knows, ought to be based on physics and metaphysics."[34] In this statement Spinoza cements the importance of ontological consideration and gives birth to Spinoza's modernity: the conviction that ontological pronouncements on general entities is antecedent to

[33] Goetschel, *SM*, 27.
[34] Selected Correspondence: Letter 38 (27) Spinoza to Blyenbergh

humanist or existential questions. In this correspondence, where Blyenbergh has questions and concerns about human nature and evil, Spinoza responds: "For this reason, I have been unable to allow myself to satisfy your demands . . . and for showing that your inquiries . . . are for the most part entirely dependent on its previous settlement. So far are they not essential to the understanding of my doctrine concerning necessity, that they cannot be apprehended, unless the latter question is understood first."[35] The necessity for process and connection is exercised in Spinoza' geometric method, whereby particulars contribute to wholes and particulars are but expressed modifications of larger wholes. For Deleuze, it is this very geometric method that allows Spinoza to not only preempt the sequential movement of Hegel's dialectic but also demonstrate the limits of such a movement. Spinoza's *Ethics* works from the inside out; the interconnectedness of the geometric method parallels Spinoza's own commitment to conatus, or a thing that strives to preserve from its inertial capacity: expressed from the inside out.

In the heart of Spinoza's ontology is this *conatus.* The earliest writers who dabbled in conative theorizations were Latin writers, and used the term in the general and literal sense of a thing's movement, or its striving. In this way, the earliest expressions of conatus were both proper to physics and metaphysics. An imperfect comparison can be drawn between the medieval understanding of conatus and the Newtonian conception of inertia, in the same way that a medieval conception of impetus, or impulse, parallels an advancing Newtonian conception of momentum. Contemporaries of Spinoza also write about conatus and conative states. Descartes, for example, in his writings on gravity and self-preservation argues, "Each thing, insofar as in it lies, always preserves in the same state, and when once moved, always continues to move."[36] Descartes own musings foreshadow a prelude to the scientific vision of inertia,

[35] Ibid.
[36] Blackwell, Richard J. (1966) "Descartes' Laws of Motion." *ISIS,* 57(2): 220, DOI: 10.1086/350115.

though fall short to account for a physical reality, though his musings on gravity and self-preservation incorporates an understanding of conatus that reflects an inner-layer or an under-layer. Similarly, Hobbes incorporates a usage of conatus. For Hobbes, however, conatus resembles something more akin to *will,* where conative bodies reflect a strive to survive, and "seek peace and fight against non-peace." [37]

But it is Spinoza, who takes seriously the importance of conatus on an ontological plane, for it is Spinoza who argues that this striving is the very essence of a thing, of each thing. In this unification, Spinoza transcends the binary oppositions of life/death, organic/inorganic, active/passive. More than this, Spinoza derides visions of matter that collate matter as inert, passive, and inactive. Bennett explains, "for Spinoza . . . *conatus* is expressed as a stubbornness or inertial tendency to persist; in the case of a complex body or mode, conatus refers to the effort required to maintain the specific relation of 'movement and rest' that obtains between its parts, a relation that defines the mode as what it is."[38] The importance of conatus, Bennett argues, is found in its 'inertial tendency;' that is to say, conative bodies are active and lively bodies that derive their vibrancy not from an external rendering of the phenomena in a subject-object orientation, but rather from their own and complex make-up as things with power of an intuitive and affective degree. Spinoza argues, "Each thing insofar as it is in itself, endeavors to persevere in its being."[39] That Spinoza unites all materialism through *conatus* contributes to the universalism that Spinoza observers through particulars—this move tasks Husserl to observe Spinoza as developing the "first universal ontology."[40] For the *Ethics* of Spinoza, this

[37] Schmitter, Amy M. (2006) "Hobbes on the Emotions." *Stanford Encyclopedia of Philosophy.*
[38] Vibrant Matter. 22.
[39] (Spinoza, Ethics, Prop V)
[40] Edmund Husserl, The Crisis of European Science and Transcendental Phenomenology, Northwestern University Press, 1970, 65.

unabridged seam between humans and non-human entities exposes the ways in which Spinoza's thought de-elevates the human.

If for Spinoza conative bodies are characterized by their lively inertial tendencies to persist, then for Bennet, objects command activity that is irreducible to their parameters but made all the more evident by their interactions and intermingling. Bennett's own "Thing-power materialism is a speculative onto-story, a rather presumptuous attempt to depict the nonhumanity that flows around but also through humans" by taking seriously the agential capacities on non-human agents and material ontic beings.[41] Bennett expands the ideographical weight of conatus to include images of *agency*, such that the two terms could be synonymous and interchangeable. For Bennett, matter gives way to a vibrancy—a liveliness. This understanding of material bodies as lively and active draws from Bennett's affinity to Deleuze and Guattarian appropriations of Bergonist thought, from the theorist Henri Bergson. Bergson claimed that evolution was pushed by a "vital impulse" that exists and pulsates throughout a flat plane of existence.[42] Bergson's contributions to both rhizomatic and emergent thought can be captured in his insistence that both the evolutionary and metaphysical aspects of becoming are moved by a 'creative' force. Bennett explains, "Deleuze and Guattari, following Henri Bergson and anticipating more recent work in contemporary complexity theory, posit a mode of becoming that is both material and creative, rather than mechanical and equilibrium maintaining."[43]

Bennett's *agency* is a recognition of vitality and vibrancy in her surroundings, not an anthropomorphizing extension or affordance bestowed to inanimate objects. The lively force of

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[41] Bennett, Jane. "The Force of Things: Steps toward an Ecology of Matter." *Political Theory* 32, no. 3 (June 1, 2004): 349.

[42] (*Vibrant Matter,* 60.)

[43] Ibid. VM 60.

things may not always be apparent—but they are decidedly in all material. Materialism is accountative for as Bennet explains:

> [M]ateriality is a term that applies more evenly to humans and nonhumans. I am a material configuration, the pigeons in the park are material compositions, the viruses, parasites, and heavy metals in my flesh and in pigeon flesh are materialities, as are neurochemicals, hurricane winds, E. coli, and the dust on the floor. Materiality is a rubric that tends to horizontalize the relations between humans, biota, and abiota. It draws human attention sideways, away from an ontologically ranked Great Chain of Being and toward a greater appreciation of the complex entanglements of humans and nonhumans."[44]

The human estate is caught in myriad and multiple tentacular entanglements with external bodies. The pre-human lichen that make the particulate matter of the air are traveled star dust. We, are traveled star dust. As the stream of consciousness writer Annie Dillard notes, "We inhale "many hundreds of particles in each breath we take," . . . Air routinely carries intimate fragments of rug, dung, carcasses, leaves and leaf hairs, coral, coal, skin, sweat, soap, silt, pollen, algae, bacteria, spores, soot, ammonia, and spit, as well as "salt crystals from ocean white-caps, dust scraped off distant mountains, micro bits of cooled magma blown from volcanoes and charred microfragments from tropical forest fires."[45] The ontological task is to make kin with these "intimate fragments," to know them, to acknowledge them—to attune to their ability to intimate their own intimacy.

Bennett's understanding of conative bodies demands a creative account of change and events that can accommodate for physical matter's influence on systems and ecologies. That

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[44] Vibrant Matter, 112.
[45] Annie Dillard, *For the Time Being,* 150.

objects have conatus bears on their acting in a mappable network of actors, wherein effects can be understood to be the cumulative result of various constants in flux and relationship with each other via historicity and physicality. That non-human bodies can respond to and inform their ecologies is suggestive of a more 'distributive' agency that calls into question the assumptions of anthropocentrism. When agency can go beyond its contemporary situation in 'the human,' then political considerations and interrogations of agency can move beyond proto-human concerns like moral permissibility and culpability.

IV. From Linear to Emergent Causality

The conative state of material non-human bodies informs Bennett's own account of causality. Bennett casts aside traditional linear understandings of causality, whereby effects are understood to be the yield of an efficient process that responds to simple, non-complex, aggregate models in singular input with measurable output. This is significant. The tradition of efficient causality can be traced back to Aristotle, in his rendering of the four causes, wherein the agential or efficient cause is the "primary source of the change or rest."[46] Notable in Aristotle's analysis of efficient causality is the primary, or unitary, force behind causality—this thought is dissolved by emergent understanding of agency that account for distributed continuums of agential activity across bio-, techno-, physical- morphisms. Bennett and her contemporaries are privy to an emergent view of causality. This potential for emergent theories of causality arises as early as Lucretius' Proem and persists through John Stuart Mill's own exception to the law of composition of causes. JS Mill notes that emergent properties and effects, like those observed in chemistry, are an exception to his law of composition of causes. These forces might follow heteropathic laws of their own, Mill theorizes. "If this be true of chemical combinations, it is still more true of those far more complex combinations of elements which constitute organized bodies; and in which those extraordinary new uniformities arise which are called the laws of life."[47] Linear, or efficient, registers of causality are inadequate to account for the vast and myriad examples of non-linear causality underway in the material world—multiplicities upon multiplicities of non-linear causality. It is incumbent to explore non-linear dynamics,

[46] Falcon, Andrea. "Aristotle on causality." (2006). Stanford Encyclopedia of Philosophy.
[47] JS Mill, *System of Logic*, 459.

especially if more acute ontological renderings are revisionist contingent upon the most recent developments afforded by the methodological situation of the empirical sciences.

Linear systems are those systems where the conditions are not random—cause and effect demonstrate an explicit relationship. In other words, linear systems are dependent on initial conditions, where the current state of affairs determines the future state in a way that can be traced, but does not need to be mapped. Dynamic systems evolve with time, in non-linear relationships the space between the variables of importance are not successive. For example, consider the gas gauge in a vehicle—the relationship between the amount of gas burned and the needle is non-linear, but more dynamic and complex. Similarly, temperature and pressure illustrate emergent properties. First, temperature and pressure can only be spoken of in terms of molecular *populations,* whose micro-variance can only be understood on a statistical or stochastic purview. In the case of temperature, snapshots of temperature are the "average energy that a molecular population has by virtue of the *motion* of its parts, the more violent the motion, the more intense the temperature;" pressure can be similarly understood through the virtue of the population's momentum against a container—neither of which can be reduced to the activity of any citizen molecule, but must be understood as the net gradient effect of their cumulative and independent inter-actions.[48] Additionally, dynamic and emergent systems can also be observed in ants constructing bridge, where each independent ant can work towards the construction of a bridge without a centralized command system, but through heterogenous activity and self-organizing mechanisms.

[48] Manuel DeLanda, *Philosophy & Simulation*, 2011, 7.

Ants Assembling Bridges—Ants work to create bridges out of heterogenous connections and self-assembling intuitions, they are rhizomatic and examples of emergence in natural life.

Fig. 2

An appropriate and helpful image of emergent causality arises in Bennett's discussion of metals, in the complex dynamics of spreading cracks that develop in metals and ores. Bennett illustrates, "The line of travel of these cracks is not deterministic but expressive of an emergent causality, whereby grains respond on the spot and in real time to the idiosyncratic movements of their neighbors, and then to their neighbors' response to their response, and so on, in feedback spirals."[49] Here Bennett's image demonstrates the complexity and non-linearity of emergent causality; in this structure, emergent causality accounts for the lively and independent trajectories of actants to not only be informed and constructed by their environment but also to act as quasi-forces that shape, respond, and stimulate their surroundings in turn.

[49] Vibrant Matter, 59.

Geologists call the cracks that disseminate within ores and rocks "veins,"—these cracks are part of a larger vascular network of spreading that both illustrates history and develops it, in 'real time.'

Fig. 3

Michael DeLanda, a contemporary of Bennett and scholar of Deleuze, writes, "Let's return to the question of emergence to finally give a definition: a property of a whole is said to be emergent if it is produced by causal interactions among its component parts. Those interactions, in which the parts exercise their capacities to affect and be affected, constitute the mechanism of emergence behind the properties of the whole."[50] For DeLanda, the elemental relationship between component parts and properties of the whole is rhizomatic, it demonstrates the power of parts in the assemblage to congregate, though also contours the potential for the parts of the assemblage to compete. Emergent structures are those structures that reflect the contributive work of a whole array of actants—the cumulative and contingent result of the agency of many entities.

That causality can be emergent is one thing; though; that emergences in causality can be coalesced around a concept or organization is an entirely other thing, and a daunting philosophical project. What model of organization can accommodate for the vastness and

[50] DeLanda, Manuel. "Emergence, causality and realism." Architectural Theory Review 17, no. 1 (2012): 6.

multiplicity of emergent-effects? Bruno Latour contends that Actor-Network-Theory, informed by an image of rhizomatic thought, can account for the organizing properties of emergent effects in a system. Latour argues:

> If action is limited a priori to what 'intentional', 'meaningful' humans do, it is hard to see how a hammer, a basket, a door closer, a cat, a rug, a mug, a list, or a tag could act . . . This, of course, does not mean that these participants 'determine' the action, that baskets 'cause' the fetching of provisions or that hammers 'impose' the hitting of the nail. . . . Rather, it means that there might exist many metaphysical shades between full causality and sheer inexistence . . . things might authorize, allow, afford, encourage, permit, suggest, influence, block, render possible, forbid, and so on. [Actor Network Theory] is not the empty claim that objects do things 'instead' of human actors: it simply says that no science of the social can even begin if the question of who and what participates in the action is not first of all thoroughly explored, even though it might mean letting elements in which, for lack of a better term, we would call non-humans.[51]

For Latour agency is sourced in various actants that each have their own potentiality to construct 'contesting' actualities—this makes politics 'emerging.' Latour demonstrates that the origin and source agency is heavily debated and cannot possibly be totalized in the form of human activity. Rather agency is 'distributed' along a continuum of techno-, bio-, and physical-morphisms that can be understand as actants. DeLanda trades Aristotelian generalities of 'actuality' and 'potentiality'—for their reliance on linear understandings—for distinctions of *properties* and *capacities* (tendencies):

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[51] Bruno Latuour, *Reassembling the Social—An Introduction to Actor Network Theory.* Oxford Press, 2005. 71.

> Finally, the ontological relation between properties and capacities displays a complex symmetry. On the one hand, capacities depend on properties: a knife must be sharp to be able to cut. On the other, the properties of a whole emerge from interactions between its component parts, interactions in which the parts must exercise their *own* capacities: without metallic atoms exercising their capacity to bond with one another the knife's sharpness would not exist,"[52]

Which DeLanda prefers for their usefulness in explaining and accounting for the emergent mechanisms of change.

Emergence is at play in CAFO communities. Herds demonstrate emergent behavior. Emergent behavior in cows is the result of local and individualistic interactions between the members of the herd—acting independently and demonstrating non-summative properties. Herds of cattle are often self-organizing—the order of multi-entity systems like herds is the result of a confederative effort on the part of interactions between independent cows, with no sole cow dictating the behavior of the herding activity. Similarly, dust storms and dust-devils are the emergent result of super-cell activity where the emergent phenomena contains properties and capacities not exhibited by sole units of it component part.

To illustrate the way that distributive accounts of agency complicate both efficient causality and normative moral thought, Bennett maps the effects of a 2003 mass blackout across North America. Bennett notes that in "this selective account of the blackout, agency, conceived now as something distributed along a continuum, extrudes from multiple sites or many loci-from a quirky electron flow and a spontaneous fire to members of Congress who have a neoliberal faith in market self-regulation."[53] Bennett's philosophy asserts that the blackout is the emergent

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[52] Manuel DeLanda, *Philosophy & Simulation,* 2011, 4.
[53] Vibrant Matter. 28.

cause of various effects, each the connected result of actants working in both competition and confederation. That agency is distributed along a continuum of sources threatens the integrity of linear thought that clings to an anthropocentric affinity. Emergent systems of causality imply that linear, human-privileging, anthropocentric political thought is unable to account for circumstance at all. Though it is important to be clear, Bennett does not throw out the importance of human action, or the importance of human agency; this model of thought emphasizes difference, especially in degree—power held in degree. Bennett corroborates this claim: "This understanding of agency does not deny the existence of that thrust called intentionality, but it does see it as less definitive of outcomes. It loosens the connections between efficacy and the moral subject, bringing efficacy closer to the idea of the power to make a difference that calls for response."[54] This ought to be of vital interest to political and moral theorists, as the emergent hypothesis poses significant trouble for moral-narratives that rest in a totalized account of human agency.

Bennett draws on the work of French Philosopher Jacques Rancier to consider the ways in which agents that produce disruptive effects to the public may be considered part of democratic considerations. Bennet explains that:

> Theories of democracy that assume a world of active subject and passive objects begin to appear as thin descriptions at a time when the interactions between human, viral, animal, and technological bodies are becoming more and more intense. If human culture is inextricably enmeshed with vibrant, nonhuman agencies, and if human intentionality can be agentic only if accompanied by a vast entourage of nonhumans, then it seems that the appropriate unit of analysis for democratic theory is neither the individual human nor an

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[54] Ibid. 32.

> exclusively human collective but the (ontologically heterogeneous) 'public' coalescing around a problem.[55]

Bennett's call to widen the democratic demos suggests that properly accounting for political situation has to do with the relationships *between* humans and non-human actants. Bennett explains: "A more materialist public would need to include more earthlings in the swarm of actants. If environmentalists are selves who live on earth, vital materialists are selves who live as earth . . . If environmentalism leads to the call for the protection and wise management of an ecosystem that surrounds us, a vital materialism suggests that the task is to engage more strategically with a trenchant materiality that is us as it vies with us in agentic assemblages."[56] Environmentalism is too caught up in its reification of generalities and taxonomies, fortifying hierarchies both in the sciences and in social realm. Conversely, vital materialism accommodates a distributed image of agency and captures the vibrancy of non-human actants. Bennett favors the language of 'ecology,' which better situates humans alongside other non-human actants, to the language of 'environment.'

A distributed image of agency better accounts for the metaphysical liveliness of things and their effects within ecosystems. Decentering the human's traditional place and privileging in classic metaphysics and ontology situates man alongside other actants in competition and confederation. This flattening of the ontological field changes and informs our rendering of both community and the public while simultaneously complicating the moral connections to political considerations. In a world of distributed agency, politics is emerging; political action and analysis becomes about navigating the relationship between human and non-human actants.

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[55] Ibid. 108.
[56] Vital Materialism. 111.

V. On CAFO's

All Quiet in the Pasture—Earth & Organization

> "It's not easy to see the grass in things and in words (similarly, Nietzsche said that an aphorism had to be "ruminated"; never is a plateau separable from the cows that populate it, which are also the clouds in the sky)."
>
> (Deleuze & Guattari, *A Thousand Plateaus, 23).*

The mestiza people from which I emerge and to whom I owe homage are neither settler-colonial nor post-settler colonized (they're rebellious in their hybridity)—the land has always been theirs and they have always worked with it. And like my ancestors my immediate family worked the land and it worked on them. We arise from rural lands, and agricultural horizons where cows and corn are more populous than souls. These lands, too, have inculcated me with modes of subjectivity. In particular, the rural and agricultural habitus of my childhood gives me a deep connection to the dirt, the *terris,* to the political ecology in which we find ourselves both in competition and confederation with natural elements and critters of all kind—co-habitants with whom we create kin. It likens me to modes of organization that are filial, tribal, and communal. I come from Hereford, Texas, the county seat of Deaf Smith County. Deaf Smith County champions itself the 'Beef Capital of the World;' an agricultural plain of 15,000 people whose industry produces over a third of the nation's cattle derived foods. Hereford is named after the Herefordshire breed of *Bos Taurus Taurus,* where the lively activity of the bovine world is reflected even in the town's name. The town can be smelled from miles away—its productive impact feeds a fifth of the nation, and its industry contributes immeasurable methane to the air,

and fecal dust to the local environment. These political ecologies of small CAFO towns like Hereford are incredibly complex and meaningful for analysis if for no other reason than the outsized role they play in the climate crisis. As the United Nations FAO explains, "world's livestock contribute 18 percent of all annual greenhouse gas emissions. But a recent report from the World Watch Institute estimates that the livestock sector could be responsible for as much as 50 percent of all climate-changing emissions—making it the most critical influential factor in global warming."[57]

Cattle in Hereford, Texas, being shipped to a slaughterhouse. Global emissions from food amount to roughly 30 percent of humanity's carbon output. George Steinmetz for The New York Times

Fig. 4

Many nickname Deaf Smith County "feedyard country," though feedyards have not always been common to the history of livestock husbandry nor the area of Deaf Smith County. In the 1940's the relative number of cattle in the United States was around 60 million head of cattle. The war years accelerated both the mechanisms of livestock production as well as increased the total head of cattle in the nation. By 1960, there were over 160 million head of cattle across the

[57] *The CAFO Reader,* "Myth: Industrial Food Benefits the Environment and Wildlife." 79.

constellate herds of the country—this number has declined somewhat to a steady 100 million head of cattle. Around the war years, the United States was looking for a way to discard plant mulch and stalks unfit for human consumption or further use. Compounded by the developments in antibiotics and food additives, it become not only possible but immensely profitable to fatten livestock in feedyards, close together, by the thousands, extremely quickly.

A typical feedyard can house approximately 50,000 head of cattle. Hereford, Texas is home to upwards of 25 feedyards, and the number of licensed CAFO operations in the county is only growing. The Hereford Chamber of Commerce website explains about the town's industry:

> Hereford is number one in the world in beef production. Cattle feeding is our main industry and we boast of being the "Beef Capital of the World." There are *more than a million cattle fed* within a 50 mile radius of Hereford. We lead the entire area in dairy production. We also are nestled in a large grain producing area where farming is abundant. These two empires create a world of agribusiness industry. Truckers, millwrights, chemical blending plants, beef processors, feed mills, grain elevators, sheet metal fabricating, pet food manufacturing, farm equipment sales, automobile sales, organic and natural food processing, crop spraying, lab analysis, irrigation equipment, material handling equipment, storage plant facilities, air conditioning services, filtering and processing facilities, tools and hardware, cotton handling facilities, veterinarians, animal nutritionists, bankers, lawyers, doctors, and realtors can all attest that success is directly tied to cattle and agriculture. Why, shoot, We even have our own used cow dealer."[58]

The people of Hereford, Texas are deeply enmeshed in inter-species muddle. A wide array of political actants from bovine feeders, grain, antibiotics, growth hormones, earth worms, cattle, horses, corn, wheat, alfalfa, milo, cotton, machinery, manure piles, and fecal dust define the town's financial activity, rituals of social economy, and culture.

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[58] Hereford Texas Chamber of Commerce, Industy: https://www.herefordtx.org/industry.html

These interconnections run deep, and permeate all aspects of provincial life in Hereford, Texas. In fact, statues of the Hereford cow decorate every major business in the area—even the town mascot mirrors the bovine who gives the area its agricultural vitality. All children of Hereford moved through the schooling system grow to understand themselves as "members of the herd." The lines between animal and human are easily blurred in Hereford, Texas—the lines between animal, money, ground, food, dirt, and dust are amorphous.

The Hereford High School Football Mascot, Scat—is a Cow. In Hereford, Texas interspecies muddle runs deep and permeates all aspects of rural life.

Fig. 5

Turbidity Or Hoof-Trampling & Other Political protests

Donna Haraway begins her work *Staying with the Trouble* with an etymological analysis of the word trouble; trouble, Haraway explains, "is an interesting word. It derives from a thirteenth-century French verb meaning 'to stir up,' 'to make cloudy,' 'to disturb.'"[59] The Latin word from which the French develops is *turbidis* which can literally mean "to raise dirt, dust." *Turbidis* precedes our understanding of turbidity, where suspended particles murk water. *Turbidis*

[59] Donna Haraway, *Staying With the Trouble—Making Kin in the Chthulucene.* Duke University Press, 2016, 1.

is preceded, itself, by *turba* or *turbah* (Aramaic) which can refer both to soil and to an unruly crowd or a present gathering. These words have given rise to turbulence, disturbance, and shares kin with tumult and "loose earth" severed from its connection to the ground, or *humus* and *solum.* The actants in CAFO ecologies are troublesome—bioturbating, they kick-up dirt, fling manure, and raise dust. Similarly, the actants in CAFO ecologies *are* this very dust, they muddle water and make of the sky opaque, dense, and thick hazes.

Ecologists and soil scientists are heavily interested in bioturbation. Bioturbation, or the reworking of soils and sediments by animals and plants, is evident across ecosystems. Walruses that dig and excavate with their tusks are some of nature's largest bioturbators. Earthworms, who mulch dirt and ingest sediments, are some of nature's smaller bioturbators. Bioturbation, modern ecology explains, "is now recognized as an archetypal example of 'ecosystem engineering', modifying geochemical gradients, redistributing food resources, viruses, bacteria, resting stages and eggs. From an evolutionary perspective, recent investigations provide evidence that bioturbation had a key role in the evolution of metazoan life at the end of the Precambrian Era."[60] This ecosystem engineering is an example of the distributed agency recognizable across ecosystems where the most impressive and vital of actants for equilibrium are resoundingly non-human. Bennett, like Darwin, pays considerable attention to the "small agency of worms," to study bioturbation and ground a "not-quite human body evidence of the vitality of matter."[61] Bennett is fascinated by Darwin's claim that "Worms have played a more important part in the history of the world than most persons would at first assume."[62] That Darwin grants worms an

[60] Meysman, F, J Middelburg, and C Heip. "Bioturbation: A Fresh Look at Darwin's Last Idea." *Trends in Ecology & Evolution* 21, no. 12 (December 2006): 688. https://doi.org/10.1016/j.tree.2006.08.002.

[61] Vibrant Matter, 94.
[62] Vibrant Matter, 95.

agential role in the historical narrative paralleled by other actants, especially human, gestures to the elongated view of time that is often required to appreciate conative bodies, thing-power, emergent processes, and assemblages: where history is not biographical but evolutionary and cosmological—where worms make way for human activity and operate in both competition and confederation with the human estate. The Indian ecologist Vindana Shiva further explains about worms:

> "The little earthworm working invisibly in the soil is actually a tractor, fertilizer factory, and dam combined. Worm-worked soils are more water-stable than unworked soils, and worm-inhabited soils have considerably more organic carbons and nitrogen. By their continuous movement through soils, earthworms aerate the soil, increasing the air volume in soil by up to 30 percent. Soils with earthworms drain four to ten times faster than soils without earthworms, and their water-holding capacity is 20 percent higher. Earthworm casts, or droppings, which can consist of up to 36 tons per acre per year, contain carbon, nitrogen, calcium, magnesium, potassium, sodium, and phosphorous, promoting the microbial activity essential to soil fertility."[63]

Shiva's ability to *recognize* the agential capacities of worms affords her the ability to be hospitable and expand the *demos* to non-human polity. The ecosystems engineers that bioturbate continue an evolutionary history responsible for the Cambrian explosion that trucks forward in the hooves of cattle, who kick and rub dirt against mounds, adding to it their own excrement—composting, mulching, mixing, stirring, dirtying.

[63] Shiva, *Stolen Harvest,* 142.

Cattle are large bioturbators who hoof trample. Animal treading, where treading location, treading pressure, speed, stomp-duration, and intensity have measurable effects on the soil. The treading of animals can "affect soil physical properties, e.g., porosity, bulk density, infiltration rate, and soil strength Changes in these soil physical properties may affect other related soil processes or conditions, e.g., nutrient movement over and through the soil, soil redox potential, and nutrient transformation processes. Treading has also been shown to affect pasture botanical composition, growth rates, and dry matter yields due to crushing, bruising, and root damage."[64] One experiment conducted in Africa found notable benefits in using cattle as "tools" for communal rangeland restoration due to the trampling effects of cattle bioturbation, where hoof trampling breaks up the impermeable capped soil surface and deposits nutrients and pushes grass seed and manure into the soil.[65] When allowed free-range, cattle bioturbation can be very beneficial for ecosystems and can encourage natural cycles between foraging and land-management. However, in Feedlots, cattle bioturbation can be deadly, noxious, and obscuring. Cattle hoof-trample, kick, and stir when stressed. They hoof-trample during hot evenings and when awaiting food. Cattle hoof-trample in biological protest—kicking after their destiny of slaughter from neuro-chemical pathways that motivate stress and uproot dirt. An average bovine stomps with incredible pressure, more than 38(psi).[66] This pressure can create entire clouds of dust that stretch for miles, that cover cities for days, and that linger in the mouths,

[64] Di, H. J., K. C. Cameron, J. Milne, J. J. Drewry, N. P. Smith, T. Hendry, S. Moore, and B. Reijnen. "A Mechanical Hoof for Simulating Animal Treading under Controlled Conditions." *New Zealand Journal of Agricultural Research* 44, no. 1 (January 2001): 111. https://doi.org/10.1080/00288233.2001.9513465.

[65] https://umzimvubu.files.wordpress.com/2016/03/cattle-as-bioturbation-tool-poster-feb15.pdf

[66] van der Tol PP, Metz JH, Noordhuizen-Stassen EN, Back W, Braam CR, Weijs WA. The pressure distribution under the bovine claw during square standing on a flat substrate. J Dairy Sci. 2002 Jun;85(6):1476-81. doi: 10.3168/jds.S0022-0302(02)74216-1. PMID: 12146479.

lungs, and bronchi of organisms all around. Wind easily picks up recently bioturbated dust from feedlots and makes fugitive dust airborne. Against trite aphorisms that dirt never hurt anyone, agricultural fugitive dust is often an intermingling of pesticides, herbicides, fungi, microbes, and various bacteria.

Cattle in a Hereford Feedyard kicking up fecal dust atop mounds of manure—Photograph by George Steinmetz for the New York Times

Fig. 6

Fecal Dust

In Hereford, Texas roads are paved with bricks—the maroon color of each ACME stamped brick gives the town its own ever-present hue of melancholy. Here childhood asthma rates skyrocket. Here methane fills the air. Here fecal dust populates window sills. Fecal Dust, a pollutant emitted from the high presence of livestock in Concentrated Animal Feeding Operations, demonstrates a lively thing power that competes with human political interest. Particle dust that fills and covers CAFO communities has consistently been proven to produce disproportionately high rates of asthma in children from these communities. Dusts, particles of smoke, various organic

substances, and chips of glass or granite express Brownian motion, or movement—a random movement characterized only by its rapid oscillatory motion. Annie Diliard shares, "windblown sand collects in every low place . . . However far you live from the sea, however high your altitude, you will find sand . . . in cracks between rocks and sidewalks . . . Winds drop sand by weight, as one drops anything when it gets too heavy for one's strength. Winds carry light stone dust—loess—far afield."[67] Dust is always in movement, destined for new roads and to cling to new corners—it does not need the cattle hoof-trample to set its journey in motion; though, the competition and confederation between dust and hoof is further proof of a relationship forged by heterogenous connections and lines of flight that operate with signification from rupture. Fecal Dust impacts the human estate in multiple ways—sensory, health, economic, & agricultural.

Fecal Dust: Visibility

Visibility may not immediately seem like an area of high interest. Though visibility provides a useful area for analysis precisely because it exposes the interactions between ontic-agents in the human and non-human estate that demonstrate both the capacity of agency in matter and the impacts of inter-actions between humans and non-human agents. Visibility can be appreciated on multiple fronts. Our ability to *see* a sunset or a sunrise speaks to the aesthetic factor that visibility lends the human estate. But beyond this, visibility conditions can act as a precursor to our ability to carry out specific forms of labor or recreation. For example, flying crop-dusters, driving commercial and personal vehicles, surveying land, inspecting colors, textures, or landmarks—are all activities that can be impeded by low visibility conditions. Particulate matter and dust interfere with visibility and our ability to discern color, texture, brightness, form, or shape.

[67] Annie Dillard, *For the Time Being,* 85.

The affective capacity of dust can be demonstrated in its inter-actions with light particles, or photons. Dust scatters photons. Changes in visibility conditions result from light photons interacting with particles or gases of similar sizes. When a light photon interacts with particulate matter or gases of similar or equitable size the light photon and the dust can quite literally collide. Light diffraction, for example, is common in CAFO communities from headlights on vehicles and street lamps in cities.

The Marsha Sharp Freeway in Lubbock on December 19, 2012.
Photograph by AP/Lubbock Avalanche-Journal, Zach Long

Fig. 7

The walls of fecal dust raised by cows, voles, worms, dung beetles, horses, and cowboys (among other bioturbators) can radically reduce or even eliminate visibility. One study affirms that emissions and particulate matter from CAFOs in the Texas Panhandle can reduce visibility to below ten meters.[68] Low visibility impacts not only truck-drivers and pedestrians, but also birds and various other critters. The highest and largest plumes of fecal dust erupt from feedlots in the

[68] Auvermann, Brent, Naruki Hiranuma, Kevin Heflin, and Gary Marek. "Open-Path Transmissometry for Measurement of Visibility Impairment by Fugitive Emissions from Livestock Facilities," January 1, 2004. https://doi.org/10.13031/2013.17090.

afternoon and spread into the evening—both a combination of animal behavior (higher rates of restlessness in the evening) and drier more arid conditions.[69]

Fecal Dust: Smell

Odor exposes the ways in which the human body is made subject of its environment and is subsequently exposed to the affective capacities of agents in its environment. Affect denotes a body's inherent fitting to a world of mutual imbrications encounters. Affect also refers to a body's location in a web of interrelated force-fields, where bodies are both acted on and act on in turn; indeed, olfactory capacities of various species are inter-related to the field forces of material bodies that can both product and alter environmental odors. Smells have gained new interest in philosophy for their ability to demarcate the presence and multilayered registrations of pollution.[70] Smell is a socio-corporeal activity; it relies not only on the presence of olfactory receptors in microsmatic entities but also the entire history and schema of memory, cognition, environment, and ecology to arise as an emergent phenomena. I argue that smell is an *assemblage-phenomena*, inherently connected to other networks and reliant on a string of properties on the parts of multiple actors to produce a spatial characteristic. Smell or odor is not reducible to the mere properties of all the nodes in the process that make it possible. Its cumulative effects demonstrate independent terms produced by still other chains of affect. Its existence as an experience produced by a potpourri of external factors, each themselves contingent on the various properties or capacities of environmental matter, concedes odor's topological structure as a space of possibilities where the

[69] Lott, S.C. Australian feedlot hydrology. Part I. In Proceedings of the Feedlot Waste Management Conference, Gold Coast, QLD, Australia, 12–14 June 1995.
[70] Carolan, Michael S. "When good smells go bad: a sociohistorical understanding of agricultural odor pollution." *Environment and Planning A* 40, no. 5 (2008): 1235-1249.

degrees of freedom held by various non-human agents in a dynamic environment have heavy influence on the human estate.

I want to demonstrate the democratic-importance of fecal dust vis-à-vis its agential capacity to produce odor. In particular, I argue that odor's ability to both invoke a political response and impose a political condition demonstrates the strength of Vital Materialism in accounting for material life's role in the polity—its political impact in the community. First, I want to examine evidence that fecal dust interacts with the community by cementing's its persistence through appeals to place and political economy. In 2008, Carolan conducted a study calling residents who lived within a two mile radius of a relatively small hog facility to inquire their thoughts about the odors in the community. Carolan finds from some interviews:

> ``When you come out to the country you should expect to smell livestock'' (Jack).
>
> ``Folks from town think that just because they're out here that [the countryside] should start smelling like a city. Why they dislike the smell of a little hog shit, on the one hand, but seem not to be bothered by smog or automobile pollution is beyond me'' (Lou).
>
> ``Manure is a part of life. What could be more natural than animal excrement? Sure, it may not smell as nice as a field of flowers but that doesn't mean it should be demonized either'' (Bill).
>
> Thus, those who accepted such odors often did so because they believed that they were `in place' in the countryside, even if sometimes such smells were not found to be all that pleasant. As explained by Pete, ``That's just the way it is [referring to livestock odors in the countryside]. I may not always enjoy that fact of life, but I certainly accept it.''

That smell is something that can be 'accepted' speaks to the negotiative powers of matter and its agential capacities via one of its properties: odor. Negotiating with fecal dust or manure vis-à-vis struggles with its odor can become more complex when fecal dust exercises its agency in

competitive rather than confederative ways. Carolan demonstrates that a great number of residents may have conceded to disliking the odor but similarly testified to "accepting it." These acceptances are heavily reliant on place—on space. The more odors creep into CAFO Communities, the more likely property values go down,[71] demonstrating the ways in which fecal dust can exercise economic influence on the human estate.

Fecal dust and manure emit a potent odor—evidence of its presence in the world as terrain actor and independent entity with the capacity to evoke response, to impact, to ultimately affect. I want to begin by distinguishing smell from the other senses—namely taste and touch. I argue that olfaction is the product of odor—an imposed sense not chosen. Contrast this with taste, where a user typically chooses to eat and taste things of their own volition. If one walks into a room of pleasant or foul odors, one is suddenly *hit* with the odors, impacted by their intrusion. As Christopher Neubert explains in his own interrogations of the affective capacities of CAFO communities, odor is evidence of the political claim that non-human agents have in public life: "In Iowa, the odor of hog and other livestock waste has become a subtle object of political struggle, being waged on the terrain of the body in that brief moment between the encounter with the odor and recognition of it."[72] Members of CAFO communities negotiate the desires of the human estate with the material agency of fecal dust and other particulate matter native to CAFO communities. The "subtle political struggle" Neubert articulates metastasizes with time and fluxuates in intensity based on region, CAFO type, weather conditions, and even economic conditions. That smells can

[71] Kilpatrick, John A. "" Concentrated Animal Feeding Operations and Proximate Property Values" by John Kilpatrick, July 2001 issue of The Appraisal Journal." *The Appraisal Journal* 69, no. 3 (2001).

[72] Neubert, Christopher. "The Anthropocene stinks! Odor, affect, and the entangled politics of livestock waste in a rural Iowa watershed." *Environment and Planning D: Society and Space* 38, no. 4 (2020): 14.

be 'offensive' speaks to fecal dust's ability to affect the emotive, defensive, or welcomed attitudes of others.

Fecal Dust: Health

When small enough, particulate matter is capable of entering the respiratory system or various organisms with ease.[73] One study affirms: "CAFOs emit particulate matter and suspended dust, which is linked to asthma and bronchitis. Smaller particles can actually be absorbed by the body and can have systemic effects, including cardiac arrest. If people are exposed to particulate matter over a long time, it can lead to decreased lung function."[74] The mounds of manure, which gather by the thousand-ton, are potpourris are of other actants and operatives, "decomposing manure produces at least 160 different gases of which hydrogen sulfide (H2S), ammonia, carbon dioxide, methane, and carbon monoxide are the most pervasive."[75] Studies have found that CAFO communities much higher rates of pediatric asthma than even some highly industrial urban areas; a leading US study found that in schools where CAFO odor is present twice a day student asthma symptoms where 25% more severe.[76]

The health impacts of CAFO operations go beyond the affective capacity of particulate matter and other agricultural aerosols. The growing threat of emerging antibiotic resistance or novel zoonotic viruses poses significant challenges to the human estate and further demonstrates

[73] Garcia, J.; Bennett, D.; Schenker, M.; Mitloehner, F.M. Occupational exposure to particulate matter and endotoxin for California dairy workers. Int. J. Hyg. Environ. Health 2012, 216, 56–62.
[74] Hribar, Carrie, and Mark Schultz. "Understanding Concentrated Animal Feeding Operations and Their Impact on Communities." *National Association of Local Boards of Health*, Special Report, Spring 2010, 30.
[75] "Myth: CAFO manure is a benign resource." *The CAFO Reader,* 85.
[76] Mirabelli, Maria C., Steve Wing, Stephen W. Marshall, and Timothy C. Wilcosky. "Asthma symptoms among adolescents who attend public schools that are located near confined swine feeding operations." *Pediatrics* 118, no. 1 (2006): e66-e75.

the political-cards played by matter. Equally dangerous is the likelihood of run off of pollutants, fertilizers, chemicals, manure, and more into local water systems. In his characterization of the "bovine metropolis," Imhoff observes, "A million pounds of feed . . . 25 tons of corn . . . thousands of gallons of liquefied fat and protein supplements, . . . vats of liquid vitamins and synthetic estrogen . . . pallets stacked with 50-pound sacks of Rumensin and tylosin, another antibiotic," all populating CAFO ecosystems.[77]

Here, health is not quite a quality—but much more a spectrum of possibilities—the emergent result of a series of factors that demonstrate relations of exteriority. Health becomes a potentiality in that its sustenance and equilibrium depends on a specific inter-relational, agricultural, economic, ecological, conditional, emergent factors.

[77] "Power Steer—The Bovine Metropolis." *The CAFO Reader,* 96-97.

VI. Conclusion—Contribution over Totalization

> It is never we who affirm or deny something of a thing; it is the thing itself that affirms or denies something of itself in us.
>
> (Baruch Spinoza)

In the early sections of the thesis, my exploration of a brief history in the polemics of ontological materialism maps the developments of materialism from Heraclitus through Spinoza to Deleuze's own project of fractured difference. Deleuze's ontology through difference accounts for the swirling dust of CAFO ecologies—his assemblage based approach to thought accounts for the second order interactions that may complicate moral philosophy and either deepen or damage claims to culpability. Here, fecal dust can be given ontological import.

It is the capacity of Deleuze's work to account for the little things that drew me to the new materialists. Inspired by the work of Spinoza's larger materialism and monism—Bennett's own thing-power makes room for a fecal-power, a view of political ecology where even fecal dust's affective capacity to impact visibility, smell, and health can be appreciated. Though the human estate's power in CAFOs constitutes a large degree of impact—even larger impacts can cumulatively be measured between all the intermingling of matter and non-human bodies and CAFO spaces. The benefits of thing-power and assemblage theory help solve the problems presented by our traditional binaries, binaries for interpreting the world and navigating interactions are not only activity-blind but also intellectually confused.

These binaries no longer properly explain an increasingly complex world where metaphysical pronouncements must rely on an ever increasing elucidation of the material sciences. In this way, assemblage theory, thing power, and materialism corroborate the

developing understandings of emergence erupting from complexity and chaos theory, as well as their experiential corroborations in physics. This emergent understanding of causality allows us to be more attuned to distributive images of agency and appreciate the degrees of affect negotiated between the human estate and its non-human inter-actors. That fecal dust can be meaningful in ontological parsing speaks to the dynamism and importance of metaphysical inquiry. As the intuitive discipline, ontology reminds us of our contributive, not totalizing role in the universe.

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